



MEMORANDUM

To: Melanie Morash; RPM, OSRR, US EPA Region 1

From: W. Brandon, Hydrogeologist, Technical Support Hydrogeologist, OSRR, US EPA Region 1

cc: EPA site Team (LAJ/JD'L/KP/MN), Nobis (JL/JB)

Date: November 5, 2019

Subject: Recommendation of locations for multi-port well installations, Containment Area, Olin Chemical Superfund Site, Wilmington, MA.

Introduction:

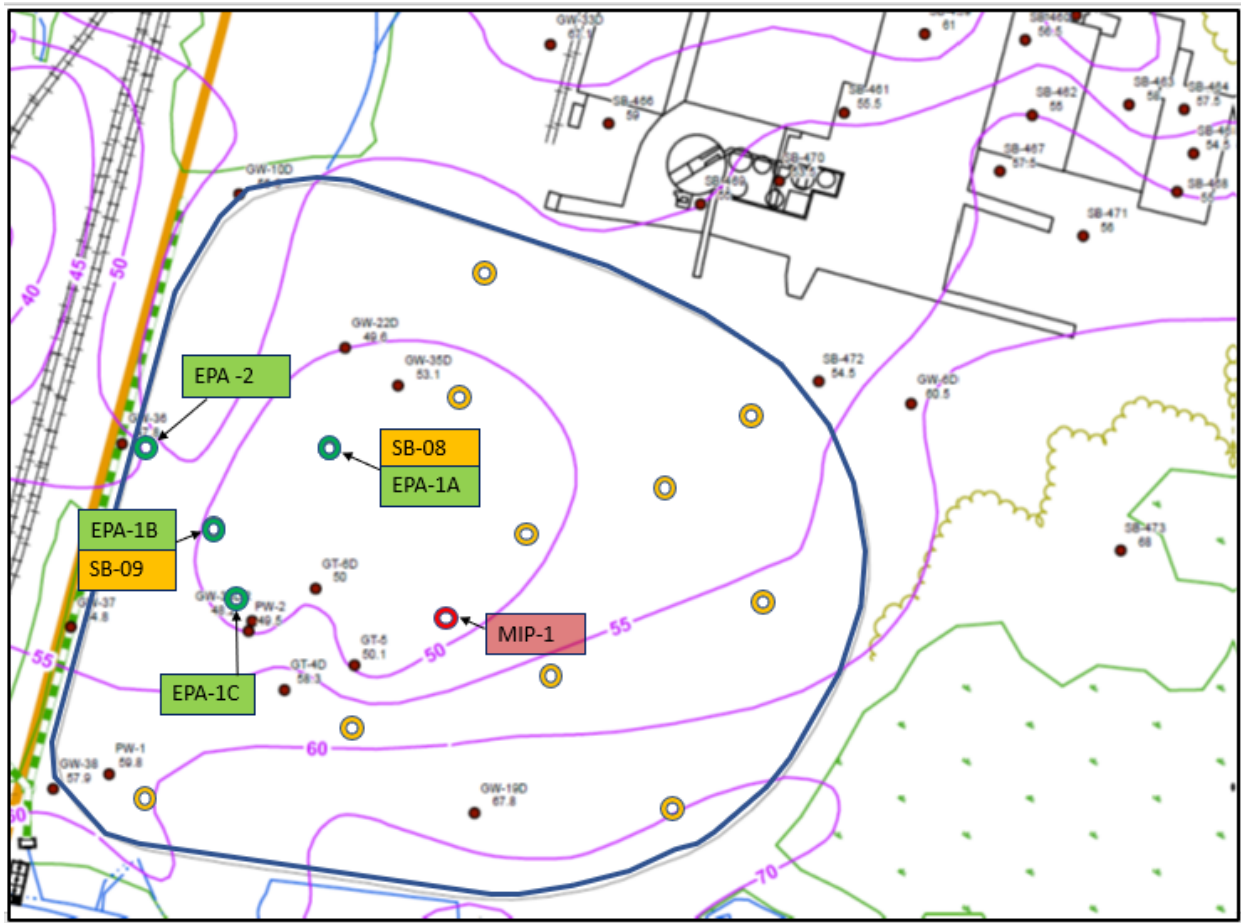
This memorandum is intended to provide EPA's preferred locations for two multiport monitoring wells to be installed soon within the Containment area (CA) at the Olin Chemical Superfund Site, Wilmington, MA. Earlier schedules had called for installation of these multiport wells immediately after a series of new soil borings have been advanced to bedrock within the CA. However, pending any unforeseen issues, the CA drilling program is expected to conclude late this week. Multiport wells are presently on order from the manufacturer (Solinst) in Canada and are no longer expected to be available for this phase of site work. A firm estimate for delivery to the site is not yet available. Installation of multiport wells will therefore require a separate mobilization. The wells on order will have 15 ports spaced at 1-ft intervals from the bottommost interval to the 10th port, and at 2-ft intervals (upward) thereafter (see Olin email dated 11-1-2019 for additional detail). Timetable for delivery is TBD. It should be noted that drilling crew availability represents a potential future scheduling uncertainty/issue. However, additional time will allow for additional evaluations which can result in a technical consensus for the best locations for the multiport installations.

Locations:

The following figure and associated table indicate two locations within the Containment Area at the Olin Chemical Superfund Site, Wilmington, MA. The locations have been prioritized based on EPA's knowledge and analysis of site conditions to date. A site visit on November 4 also contributed to EPA's current recommendations.

ID	Location	Comment
EPA-1A	SB-08	See comments below. EPA-1 to be selected from deepest confirmed bedrock elevation encountered at 3 locations: SB-08, -09, and vicinity of PW-2
EPA-1B	SB-09	A/A
EPA-1C	PW-2	Locate proximal to PW-2 is no deeper location identified at SB-08 or -09. Consideration should be given to a location near PW-2 in order to provide an analogue for subsurface conditions nearest to PW-2

EPA-2	GW-36	Deepest part of basin in downgradient location on potential pathway in bedrock
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Additional Recommendations and Comments:

EPA's site visit on November 4 contributed to the following recommendations, observations, and comments:

1. On November 4, 2019, SB-08 was completed (0-36 ft bgs). It is highly relevant to note that the last 2-feet of the cored interval (34-36 feet) penetrated gneissic bedrock. Olin interpreted this observation to indicate the top-of-competent bedrock surface to be at approximately 34 feet bgs. If this is true, this would in turn indicate that TOR surface is approximately 10 feet higher than Olin had anticipated at this location, based on field discussions. Additionally, contrary to expectations, DAPL was *not* encountered at this location, (although green-stained overburden deposits may represent residual DAPL in some form). This situation therefore presents a conundrum, with the following potential explanations (among others):
 - a. The TOR measured at 34 ft bgs is erroneous? It is possible that the bedrock encountered is a boulder. Actual TOR may be somewhat deeper.

- b. The TOR measured at 34 ft bgs is accurate? If this is verified, it may suggest that the bedrock surface is more variable than previous interpretations have suggested. As such, the anomalously high bedrock at SB-08 may represent a local high point or pinnacle, and may have simply missed the deeper part of the basin in that area?
- 2. These issues highlight concerns EPA has previously articulated in written memoranda and at meetings. Seismic reflection and/or other surface geophysical approaches will ultimately be needed within the CA footprint itself in order to clarify the true nature and complexity of the TOR surface in this area. Consideration should be given to completing such surveys prior to finalizing locations for multiport monitoring well and extraction well installations. Even if this is not possible at this time, it will be necessary to perform additional surface geophysical surveys or other efforts to insure the TOR representation beneath the CA is well resolved, accurate, and can support a remedial design and evaluation of a variety of remedial alternatives.
- 3. There is a temporary casing installed presently in the SB-08 borehole. It may be necessary to collect additional rock core at this location before a final determination can be made as to the true TOR depth here. It is recommended that the existing SB-08 borehole is extended 5 or more feet in order to establish whether there is a boulder at that location, and whether actual TOR depth is deeper than currently believed. If the TOR surface is confirmed at the current shallow depth, it may be worth considering a step-out location, e.g., 20 to 30 feet to the SSW, to ascertain whether unexpectedly high bedrock at the original SB-08 location is a localized feature.
- 4. Moving forward, it is essential that at least 5 feet or more (preferably 10 feet) of rock core are collected at all locations in order to make defensible conclusions regarding depth of TOR surface.
- 5. EPA's preliminary preferred locations for multiport well installations are listed above. However, as discussed during the November 4, 2019 site visit, Olin and EPA representatives agreed that final selections for multiport wells installations will benefit from all the information to be collected from the ongoing drilling program. As such, it will be necessary to share all information to the site team before locations are finalized in order to reach a technical consensus on the best location(s) for multiport well(s) in the CA.